



PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in or relating to Ink Fountains for use in Printing Presses.

We, GOSS PRINTING PRESS COMPANY LIMITED, a British Company, of Bouverie House, Fleet Street, London, E.C.4, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This invention relates to ink fountains suitable for use in magazine and other printing presses of the kind including a fountain roller partially submerged in the ink within the fountain, an adjustable ink-regulating or doctor blade co-operating with said roller, and a partition (or a plurality of partitions) for sub-dividing the fountain into separate compartments.

Generally stated, it is the chief object of the invention to provide improved partitioning means whereby an ink fountain may be divided into a plurality of compartments for receiving different colours or types of ink; and whereby an effective seal will be provided which will prevent leakage of ink between adjacent compartments.

According to the invention in an ink fountain of the kind referred to wherein the or each partition is positionally adjustable lengthwise of the fountain roller and has sealing means associated therewith adapted to co-operate with said roller, the sealing means comprise a pad or the like of pliant sealing material interposed between the partition and both the blade and a portion of the fountain roller and an arcuate substantially rigid strip also interposed between said partition and said roller and extending from the periphery of the roller to a point at that side of the latter remote from the blade.

In order that the invention may be clearly understood and readily carried into effect, the same will hereinafter be more fully described with reference to the accompanying drawings, in which :—

Figure 1 is a transverse sectional view of a printing press ink fountain embodying the present invention;

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Figure 2 is a fragmentary longitudinal sectional view taken substantially along the line II—II in Figure 1;

Figure 3 is a fragmentary transverse sectional view through the fountain, taken through one of the adjustable partitions;

Figure 4 is a detail perspective view of one of the partitions included in the fountain of Figures 1 to 3;

Figures 5 and 6 are enlarged detail sectional views taken substantially along the lines V—V and VI—VI in Figure 3; and

Figure 7 is an enlarged fragmentary sectional view of the metal sealing strip coacting with the fountain roller and its associated spring.

In its broader aspects, the invention is applicable either to overshot or undershot type fountains. Since in its more specific aspects it is, however, particularly applicable to overshot fountains, the type which has incidentally proved most difficult in the past to equip with dividing partitions, the invention has been illustrated herein as applied to the overshot type.

Referring now to the drawings, and firstly to Figures 1 and 2 thereof, the apparatus includes an ink fountain or pen 10 of generally trough shape in which revolves an overshot fountain roller 11. The fountain 10 comprises end plates 12 (one being shown in Figure 2) fixed to a cast body 13 having a flat bottom 14 and inclined flat side faces or walls, 15, 16. The purpose of providing a fountain with inclined flat side walls or, in other words, tapering cross section as shown, will appear hereinafter. The roller 11 is journaled in suitable bearings, one of which is indicated at 17 in Figure 2, located at opposite ends of the fountain and, during operation, revolves in a counter clockwise direction as viewed in Figure 1.

Extending longitudinally of the fountain roller 11 is a regulating or doctor blade 18 which serves to limit the thickness of the film of ink carried by the partially submerged fountain roller 11 to a pick-up roller 19. The blade 18 is carried on the underside of a

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supporting channel 20, the portion of the blade remote from the roller being clamped to the underside of the channel by a retaining strip 21. The usual adjusting screws 22 threaded in the channel or housing 20 and operated by finger pieces 23, bear against the upper side of the blade 18 at equally spaced intervals along the length thereof and serve to flex the blade adjustably towards and from the fountain roller. In the normal operation of the fountain, a body of ink is maintained to a depth indicated generally by the dot-dash line 24 in Figure 1. As the fountain roller 11 revolves the ink builds up on its trailing side beneath the blade 18, as indicated, and a film the thickness of which is regulated by the blade is carried to the pick-up roller 19. It should be observed in passing that the body of ink built up on the roller beneath the blade 18, as a necessary incident to operation, poses a particularly difficult problem of sealing that area for any inserted partition.

Pursuant to the aim of the present invention, provision is made for dividing the fountain 10 into separate compartments distributed longitudinally of the fountain roller 11. For that purpose one or more partitions 25 are removably mounted in the fountain in position to extend transaxially of the roller and are adjustable longitudinally of the latter to vary at will, the sizes of the several compartments which they define. Since all of the partitions may be identical, a description of one will suffice. In the form shown, the partition 25 is split into upper and lower sections 26, 27, secured together by screws 28 (see Figure 3). The parting line between the two sections is so located that the lower section embraces slightly less than one-half the circumference of the fountain roller 11, while the upper section extends from the lower section to a point immediately beneath the regulating blade 18.

To secure the partition 25 in place, C-shaped clamps 29 are fixed to its opposite sides and arranged to embrace the marginal or lip portions of the fountain 10. Screws 30 threaded in these clamps engage the undersides of the fountain lips. Upon loosening these screws the partition can readily be slid endwise of the fountain roller to shift the position of the partition.

The partition 25 is made of metal, as is the fountain 10, so that a metal-to-metal seal is afforded between the lower edges of the partition and the abutting surfaces of the fountain. Such edges and surfaces are accurately machined to flat contour, and the fountain is of uniform cross section in a direction axially of the fountain roller 11. Moreover, the exterior of the roller 11 is itself of smooth cylindrical contour. Accordingly, the partitions can be freely slid endwise of the roller and will fit equally well at any point along its

length. The tapering cross-sectional shape of the fountain body or, in other words, the provision of outwardly inclined faces 15, 16, makes it possible for the clamp screws 30 to draw the partition down into the fountain with more or less of a wedging action to enhance the sealing effect. On the other hand, when the screws 30 are loosened the partition can readily be freed sufficiently from the surfaces of the fountain to permit adjusting movement of the partition.

A metal-to-metal seal is also afforded between the lower partition section 27 and the fountain roller 11. For that purpose a metal sealing strip 31, resembling a sector of a piston ring, is employed, this strip being curved to conform to the peripheral contour of the fountain roller. The strip 31 is seated in a groove 32 in the edge of the lower partition section 27, being retained against lateral displacement by the side walls of such groove, and the outer end of the strip is overlaid by the tail of the left hand clamp 29 (see Figure 3) so as to limit the displacement of the strip in a direction clockwise of the fountain roller. A sheet metal spring 33 of undulatory or wavy shape is interposed between the bottom of the groove 32 and the sealing strip 31 so as to urge the latter into contact with the fountain roller with substantially uniform pressure throughout the length of the sealing strip.

The movement of the regulating blade 18 relative to the fountain roller 11, which is a necessary incident to adjustment of the blade during the operation, somewhat complicates the problem of sealing the corner of the partition 25 between the blade and roller. To accommodate such movement while still retaining an effectual seal at that point, a pad or strip 34 of pliant sealing material is located in a groove 35 extending about the entire edge of the upper corner portion of the upper partition section 26. Various materials may be used for the pad 34, such, for example, as felt or rubber. In the preferred arrangement illustrated, the pad is laminated, consisting of two strips of felt joined by a layer of synthetic rubber. The pliant sealing pad 34 extends from the adjacent end of the metal sealing 31 upwardly about the periphery of the fountain roller to the regulating blade 18, and thence outwardly beneath the blade for approximately one-half the width of the latter. The pad 34 is sufficiently yieldable that the regulating blade 18 may be flexed without substantial interference and yet the pad is sufficiently resilient that it remains in contact with the blade, as well as the fountain roller, at all times.

By arrangement of the pliant pad 34 as a single strip supported on a separate section 26 of the partition, replacement of the pad is made easy. All that is required is to unscrew the section 26 and put a new strip in the

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groove 35. Such ease of replacement for this particular part is especially desirable since, of all the sealing elements shown, it is most subject to deterioration, either through wear or loss of resiliency.

The metal strip or sealing ring section 31 coacts with the pliant pad 34 in retaining the latter in intimate contact with both the fountain roller and regulating blade. As to that, it will be observed (see Figure 3) that the forward end of the metal strip 31 abuts against the adjacent lower end of the pad. As the fountain roller rotates in its usual counterclockwise direction or, in other words, in a direction to pass the metal sealing ring and pad in that order, the frictional drag of the fountain roller on the metal strip 31 urges the latter constantly toward the pliant pad. In consequence, the metal strip serves to crowd or urge the pliant pad constantly toward the opposed face of the regulating blade and to buckle it outwardly slightly towards the roller.

Provision is desirably made for lubricating the contacting surfaces of the seal and fountain roller to prevent sticking or scoring of the latter. For that purpose grease or other suitable lubricant is supplied through a duct 36 in the partition 25 equipped with a conventional supply fitting 37. This passage leads to the groove 32 in which the sealing strip 31 and spring 33 are seated and the grease emerges from this groove through small transverse holes 38 drilled at intervals in the strip 31. A shallow channel 39 in the face of the sealing strip 31 interconnects these holes so as to provide for flow of grease along the full length of the strip. Some of the grease presented in this groove is carried by the fountain roller to the face of the pliant pad 34 so that it too is adequately lubricated.

The operation of the disclosed apparatus will in general be clear from the foregoing. By way of brief recapitulation it may be noted that the fountain 10 is equipped with any desired number of partitions 25. In setting up the press for a particular run the clamp screws are loosened and the partitions adjusted to divide the fountain into compartments of desired length. Retightening of the screws clamps the partitions firmly in position. The dividing partitions are located in such manner that inks of various colours or types may be supplied in the resulting divided portions of the fountain to corresponding portions of the fountain roller and if desired some one or more of the compartment between the partitions may be left empty entirely if that width of the press is to be unused.

Having initially set the partitions 25 in desired position, any flow of ink past them is effectually prevented since there is a full and effectual seal not only between the partition and fountain body but also between the par-

tition and all portions of the fountain roller 11 and regulating blade 18 which might be contacted by the bodies of ink contained in the successive compartments of the fountain. Other than supplying lubricant from time to time by applying a grease gun to the fitting 37, the sealing apparatus requires no further attention during use, irrespective of changes in adjustment of the regulating blade 18.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An ink fountain of the kind referred to and wherein the or each partition is positionally adjustable lengthwise of the fountain roller and has sealing means associated therewith adapted to co-operate with said roller in which the sealing means comprise a pad or the like of pliant sealing material interposed between the partition and both the blade and a portion of the fountain roller and an arcuate substantially rigid strip also interposed between said partition and said roller and extending from the pliant sealing pad or the like around the periphery of the roller to a point at that side of the latter remote from the blade.

2. An ink fountain according to claim 1, wherein the partition extends above the normal level of ink in the fountain and comprises two detachable interconnected sections closely embracing the fountain roller, one of said sections supporting the substantially rigid sealing strip and the other the pliant sealing pad.

3. An ink fountain according to claim 1 or 2, wherein the said substantially rigid sealing strip is resiliently urged into contact with the fountain roller, while the pliant sealing pad is pressed into contact with said roller by the frictional drag imposed by the roller on the said strip.

4. An ink fountain according to claims 2 and 3, wherein the said sealing strip and pad are housed within a continuous arcuate groove formed in the partition sections.

5. An ink fountain according to claim 4, wherein the said sealing strip is urged towards the fountain roller by an undulatory spring positioned between the base of the groove and said strip and extending substantially the full length of the strip.

6. An ink fountain according to claim 2, wherein the substantially rigid sealing strip and the associated partition section embrace not more than half the circumference of the fountain roller.

7. An ink fountain according to claim 6, wherein the said partition section extends into ink-sealing relationship with the bottom and side walls of the fountain.

8. An ink fountain according to any of claims 1 to 6, wherein the substantially rigid sealing strip is formed of metal.

9. An ink fountain according to claim 1, wherein the partition has secured thereto C-shaped clamps which embrace edge portions of the side walls of the fountain and which carry releasable clamping means cooperating with said edge portions. 25
10. An ink fountain according to claims 7 and 9, wherein the side walls of the fountain and the side edges of the partition are correspondingly downwardly and inwardly inclined, the said releasable clamping means producing a wedging action between said side walls and the partition. 30
11. An ink fountain according to claim 1, wherein means are provided for supplying lubricant to the cooperating faces of the sealing means and the roller.
12. An ink fountain according to claim 11, wherein said lubricating means include a duct formed in the partition and extending from a supply fitting to a partition groove housing the rigid sealing strip, the latter having holes generally radially therethrough and a channel extending along the inner face of said strip and connecting said holes. 25
13. An ink fountain of the kind referred having its parts arranged, combined and adapted to operate substantially as hereinbefore described with reference to the accompanying drawings. 30

Dated this 27th day of November, 1945.

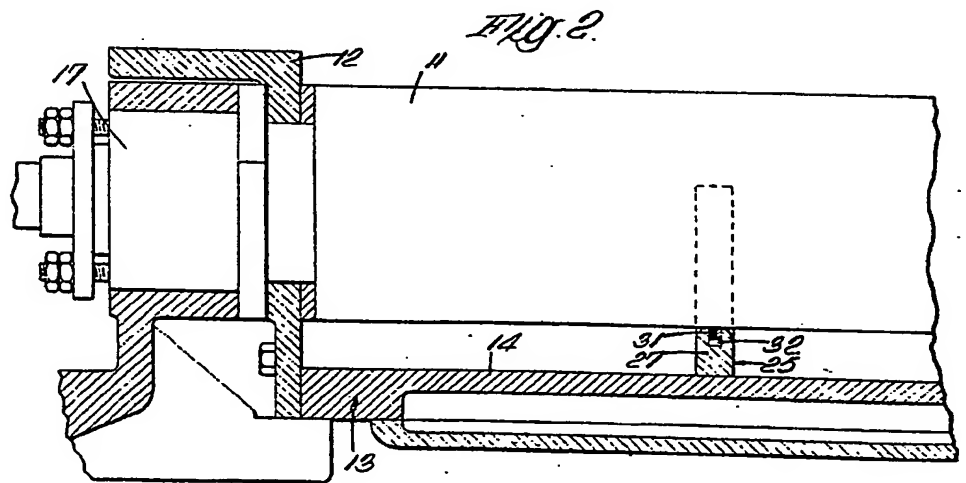
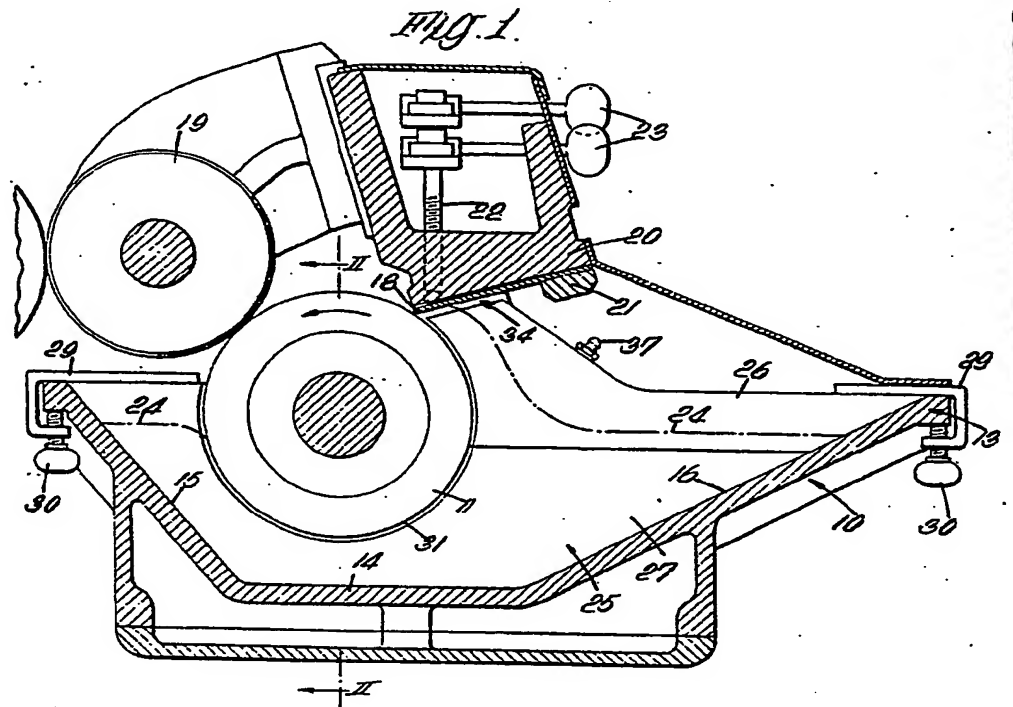
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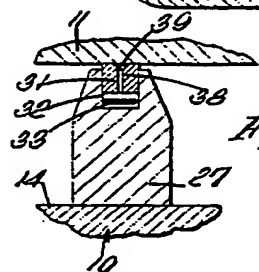
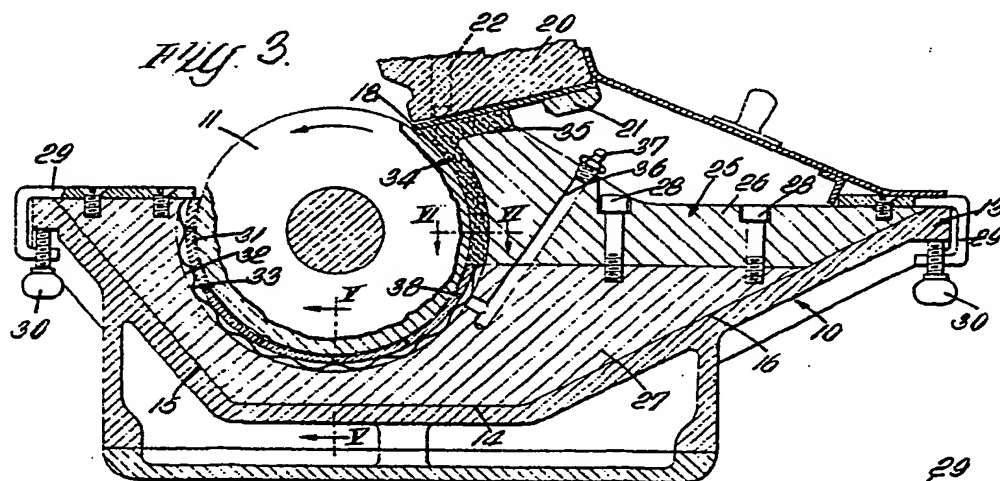
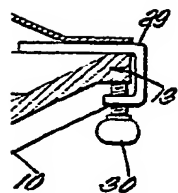


FIG. 5

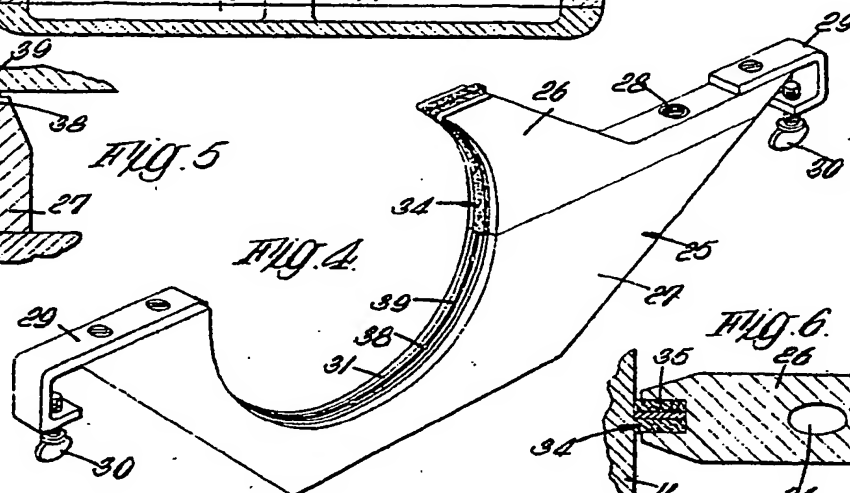


FIG. 4

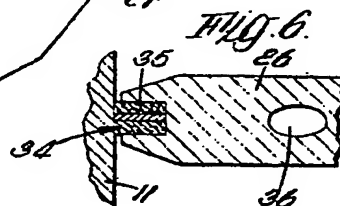


FIG. 6

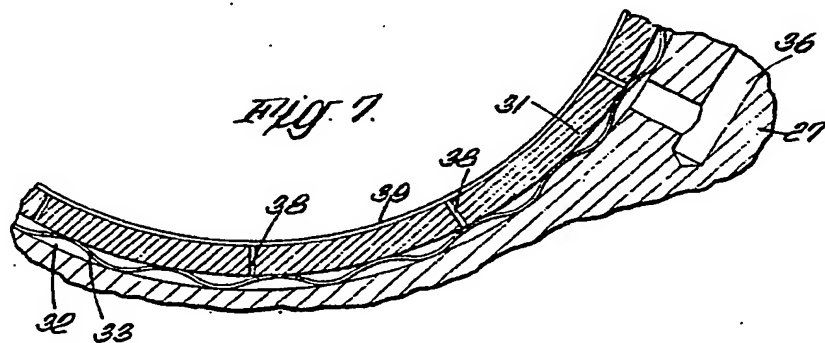


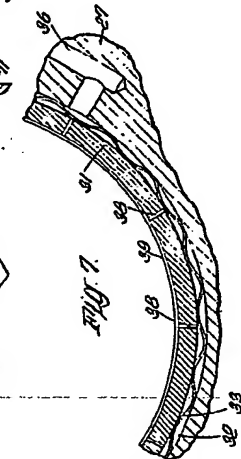
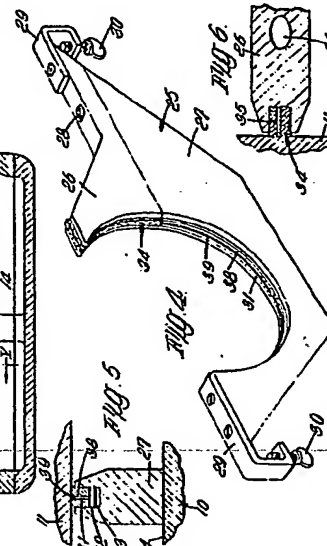
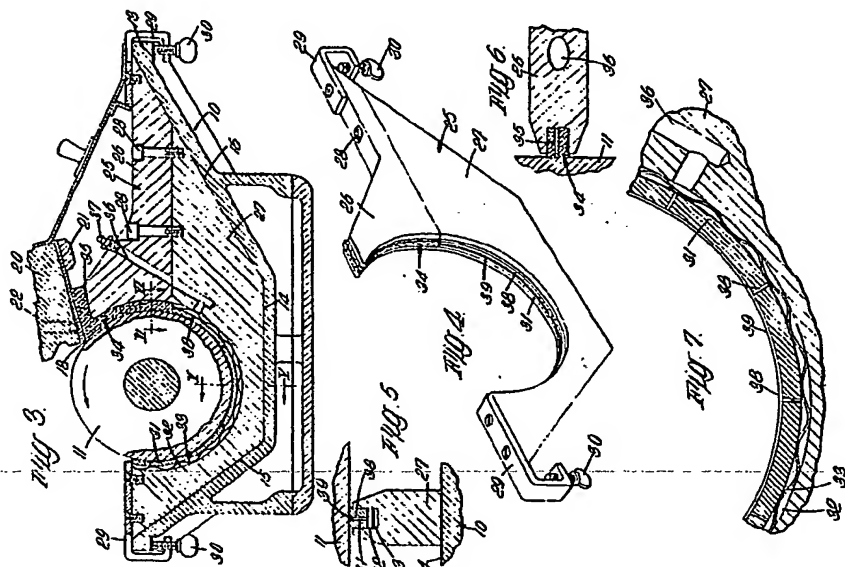
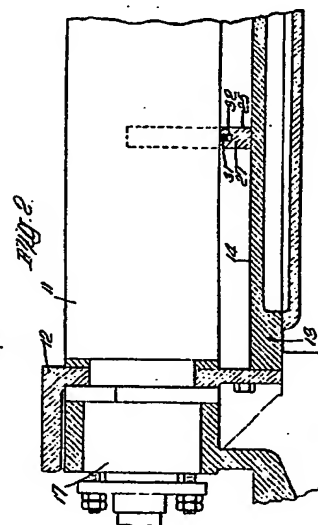
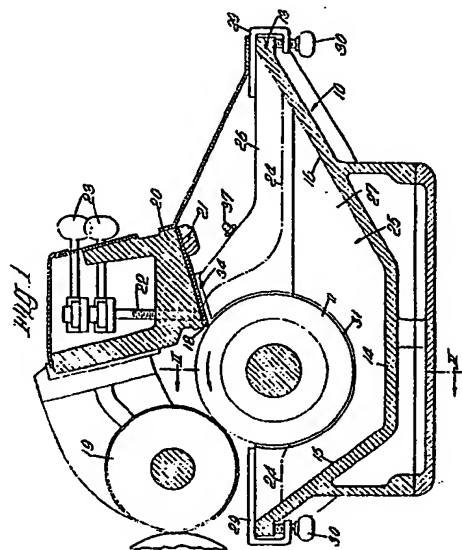
FIG. 7

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SHEET 1

2 SHEETS
SHEET 2

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